electromagnetic signals from the sample in the compartment can pass to the exterior, the size of the volume allowing identification of at least 10 of the biological particles,

performing one exposure of electromagnetic signals from the sample onto an array of active detection elements forming an image of the plurality of particles, the ratio of a linear dimension of the image on the array of detection elements to the original linear dimension in the sample compartment being from 40:1 to 1:10 when the size of the particles is between 1/3 μm and 3 μm, and from 3:1 to 1:100, when the size of the particles is between 3 μm and 100 μm, detecting the image as intensities by individual active detection elements,

processing the intensities in order to identify the image of electromagnetic signals from the species of biological particles as distinct from representations of electromagnetic signals from background signals

correlating the results of the processing to the at least one parameter of the liquid analyte material, and

assessing the at least one parameter with a repeatability error of at most 33%.

107. (new) A method according to claim 106, wherein the sample compartment has a wall part defining an exposing area, the wall part allowing electromagnetic signals from the sample in the compartment to pass through the wall and to be exposed to the exterior.

108. (new) A method according to claim 107, wherein the image of the electromagnetic signals is a one-dimensional image.

109. (new) A method according to claim 106, wherein the image of the electromagnetic signals is a two-dimensional image.

110. (new) A method according to claim 106, wherein the array of detection elements is arranged in such a way that a series of detection elements form a substantially straight line.

111. (new) A method according to claim 110, wherein the array of detection elements is arranged in two directions in such a way that the detection elements form a series of substantially parallel straight lines, the series forming a rectangle.

112. (new) A method according to claim 106, wherein the exposure of the image of electromagnetic signals onto the array of detection elements is performed by focusing an image of electromagnetic signals from at least a part of the exposing domain onto the array of detection elements by means of a focusing means.

113. (new) A method according to claim 112, wherein the focusing means is a lens consisting of one or several elements.

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114. (new) A method according to claim 106, wherein the particles the parameter or parameters of which is/are to be assessed are of a size of between 1/3 μm to 3 μm, and the ratio is in the range between 10:1 and 1:10.

115. (new) A method according to claim 106, wherein the particles the parameter or parameters of which is/are to be assessed are of a size between 3 μm and 100 μm, and the ratio is in the range between 2:1 and 1:2.

116. (new) A method according to claim 106, wherein the individual particles the parameter or parameters of which is/are to be assessed are imaged on at the most 5 detection elements.

117. (new) A method according to claim 106, wherein the interior of the sample compartment has an average thickness of between 20 μm and 200 μm.

118. (new) A method according to claim 106, wherein the sample compartment has dimensions, in a direction substantially parallel to the array of detection elements, in the range between 1 mm by 1 mm and 10 mm by 10 mm.

119. (new) A method according to claim 106, wherein the volume of the liquid sample from which electromagnetic radiation is detected on the array is in the range between 0.01 µl and 20 µl.

120. (new) A method according to claim 119, wherein the particles the parameter or parameters of which is/are to be assessed are of a size of between 1/3 µm to 3 µm, and the volume of the liquid sample from which electromagnetic radiation is detected on the array is in the range between 0.01 µl and 1 µl.

121. (new) A method according to claim 119, wherein the particles the parameter or parameters of which is/are to be assessed are of a size of between 3 µm to 100 µm, and the volume of the liquid sample from which electromagnetic radiation is detected on the array is in the range between 0.04 µl and 4 µl.

122. (new) A method according to claim 106, wherein the sample in the sample compartment is at stand still during the exposure.

123. (new) A method according to claim 106, wherein the sample in the sample compartment is moved through the sample compartment during the exposure, and wherein the exposure is performed over a sufficiently short period of time to substantially obtain stand still condition during the exposure.

124. (new) A method according to claim 106, wherein at least a major part of the electromagnetic radiation emitted from the sample during exposure originates from or is caused

by electromagnetic radiation supplied to the sample from a light source, at least a major part of the radiation from the light source having a direction which is transverse to the wall of the sample compartment or a plane defined by the compartment.

125. (new) A method according to claim 106, wherein the parameter to be assessed is the number of the biological particles per volume of the liquid analyte material.

126. (new) A method according to claim 106, wherein the parameter(s) to be assessed is the size and/or shape of the biological particles in the liquid analyte material.

127. (new) A method according to claim 125, wherein the size of the volume of the liquid sample is sufficiently large to allow identification therein of at least 100 of the biological particles.

128. (new) A method according to claim 106, comprising

applying a volume of between 0.01 µl and 20 µl of a liquid sample representing the liquid analyte material, or particles isolated from a volume of a liquid sample representing the liquid analyte material, to the sample compartment

the sample in the sample compartment being at stand still during the exposure, and in the case where at least a major part of the electromagnetic radiation emitted from the sample during exposure originates from or is caused by electromagnetic radiation supplied to the sample from a light source, then at least a major part of the radiation from the light source having a direction which is transverse to the wall of the sample compartment or a plane defined by the compartment, and

the individual particles the parameter or parameters of which is/are to be assessed are imaged on at the most 25 detection elements of the array of detection elements.

129. (new) A method according to claim 106, wherein the parameter to be assessed is the presence or non-presence of a particular type of particles in the liquid analyte material.

130. (new) A method according to claim 106, wherein particles isolated from a liquid sample representing the analyte are applied to the sample compartment or arranged in the sample compartment, the particles being retained on a particle retaining means selected from means chemically binding the particles, means capable of electronically or magnetically retaining the particles, and filtering means.

131. (new) A method according to claim 106, wherein the signal which is detected by the detecting elements originates from one or several types of molecules of types which bind to, are retained within, or interact with, the biological particles, such molecules being added to the sample or the isolated particles before or during exposure, the molecules being molecules giving rise to one or several of the following phenomena: attenuation of electromagnetic radiation, photoluminescence when illuminated with electromagnetic radiation, scatter of electromagnetic radiation, raman scatter.

132. (new) A method according to claim 131, wherein an effective amount of one or more nucleic acid dyes and/or one or more potentiometric membrane dyes is added.

133. (new) A method according to claim 106, wherein the duration of the exposure is in the range from 100 milliseconds to 5 seconds.

134. (new) A method according to claim 133, wherein the duration of the exposure is in the range of 0.5 to 3 seconds.

135. (new) A method according to claim 133, wherein the exposure is performed as a single exposure.

136. (new) A method according to claim 106, wherein compression of information of the intensities representing distinct objects scattered over an area, an object being represented by a variation in the intensity information

- said information existing in the form of varying degrees of measurable intensity of a physical property distributed over a confined area divided into sub-areas, each of which sub-areas having assigned thereto an index uniquely identifying the sub-area,

the method comprising

- determining the intensity of the physical property,

a) defining a sub-area of interest situated in a group of sub-areas comprising of at least 2x2 sub-areas situated adjacent to each other,

b) evaluating in said sub-area of interest at least one directional derivative(s) of the measurable intensity in the sub-area of interest with respect to predetermined geometrical direction(s) in the plane of the confined area, the directional derivative(s) is (are) based on measurable intensities in sub-areas situated adjacent to or in proximity of the group of sub-area,

c) based on the evaluation of the at least one directional derivative an attribute is assigned to the value assigned to said sub-area of interest; the attribute represent an adjusted measurable intensity and/or information(s) related to a predetermined strategy for adjustment of the measurable intensity in the sub-area of interest or sub-areas situated adjacent to or in proximity to the sub-area of interest,

d) repeating the step a) - c) for substantially all sub-areas of the confined area.

137. (new) A method according to claim 106, wherein the correlation comprises:

- identifying and counting substantially all detection elements having intensities which are distinct from background signals,

- adjusting the result of the counting by a predefined scaling value,

- the scaling value being directly related to the number of detection elements representing a signal from a biological particle,

- the result of the scaling being correlated to the number of particles represented exposure.

138. (new) A method according to claim 137, where the measured intensities of the detection elements have been adjusted prior to counting, the adjustment comprising the steps of:

a) defining a range of predetermined size in a co-ordinate system representing the intensity values of the detection elements, the size of the range being determined such that it is bigger than the representation of a biological particle having an average extension,

b) choosing a first detection elements, the first detection element being one of which the intensity is subject to an adjustment,

c) positioning the range such that the detection element of which the intensity is to be adjusted is substantially in the centre of the range,

d) adjusting the intensity of the detection element in the centre of the range based on the result of an investigation of at least one gradient describing the variation of the signal intensities inside the range and around the centre of the range by considering intensities of detection elements describing the gradient,

and repeating the step b) through c) until a predetermined number of detection elements has been adjusted a predetermined number of times.

139. (new) A method according to claim 138, wherein the sample compartment form which electromagnetic signals from the sample in the sample compartment can pass to the

exterior is adapted to allow the assessment of substantially only one sample of liquid analyte material.

140. (new) A method according to claim 139, wherein the sample compartment is connected with a reagent container, the reagent container containing one or several reagent component(s).

141. (new) A method according to claim 140, wherein the reagent container contains one or several reagent component(s) in an amount substantially adequate for substantially only one assessment.

142. (new) A system for the assessment of at least one parameter of a species of biological particles in a liquid analyte material, comprising

a sample compartment for containing a volume of a liquid sample representing the analyte material and comprising a plurality of particles, or a plurality of particles isolated from a volume of liquid sample representing the analyte material, from which sample compartment electromagnetic signals from the sample in the compartment can pass to the exterior, the size of the volume being 1µl or more,

an array of active detection elements arranged such that electromagnetic signals having passed from the compartment is detected on the detection elements forming an image of the plurality of particles, and

a processor for processing the intensities detected by the detection elements.

143. (new) A system according to claim 142, further comprising means for emitting electromagnetic radiation onto the sample, the electromagnetic radiation giving rise to one or several of the following: attenuation, photoluminescence, scatter, raman scatter.

144. (new) A system according to claim 142, wherein the sample compartment has a wall part defining an exposing area, the wall part allowing electromagnetic signals from the sample in the compartment to pass through the wall and to be exposed to the exterior.

145. (new) A system according to claim 142, wherein the image of the electromagnetic signals is a two dimensional image.

146. (new) A system according to claim 142, wherein the array of detection elements is arranged such that the series of detection elements form a substantially straight line.

147. (new) A system according to claim 142, wherein the array of detection elements is arranged in two directions such that detection elements form a series of substantially parallel straight lines, the series forming a rectangle.

148. (new) A system according to claim 142, further comprising means for focusing an image of electromagnetic signals from at least a part of the sample compartment on the array of detection elements.

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149. (new) A system according to claim 148, wherein the focusing means is a lens consisting of one or several elements.

150. (new) A system according to claim 148, wherein the ratio of a linear dimension of the image on the array of detection elements to the original linear dimension in the sample compartment is smaller than 10:1.

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151. (new) A system according to claim 142, wherein the particles are of a size of between 1/3 μm to 3 μm, and the ratio is in the range between 10:1 and 1:10.

152. (new) A system according to claim 142, wherein the particles are of a size of between 3 μm to 100 μm, and the ratio is in the range between 1.4:1 and 1:100.

153. (new) A system according to claim 142, wherein the individual particles are imaged on at the most 5 detection elements.

154. (new) A system according to claim 142, wherein the interior of the compartment has an average thickness of between 20 μm and 1000 μm.

155. (new) A system according to claim 144, wherein a light source is arranged such that at least a major part of the radiation from the light source has a direction which is transverse to the wall of the sample compartment or a plane defined by the compartment.

156. (new) A system according to claim 142, further comprising particle retaining means selected from means chemically binding the particles, means capable of electronically or magnetically retaining the particles, and filtering means.

157. (new) A system according to claim 142, wherein the sample compartment containing a volume of a liquid sample representing the analyte material is readily disengaged from the system.

158. (new) A system according to claim 142, wherein the sample compartment is an integrated part of a device further comprising a reagent container, the reagent container containing one or several reagent component(s).

159. (new) A system according to claim 158, wherein the reagent container contains one or several reagent component(s) in an amount substantially adequate for substantially only one assessment.

REMARKS

The above preliminary amendment is made to cancel claims 58-105 and to add new claims 106-159.

Applicant respectfully requests that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's primary attorney-of record, John J. Gresens (Reg. No. 33,112), at (612) 371.5265.

Respectfully submitted,

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